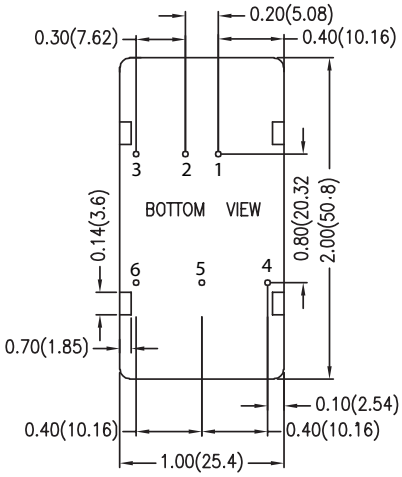
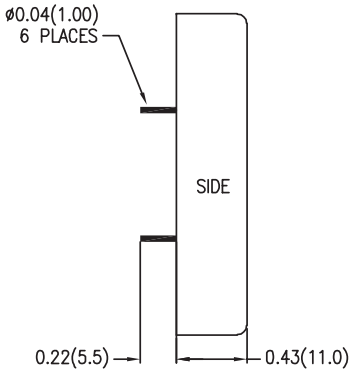
20 Watt RQT Single Series

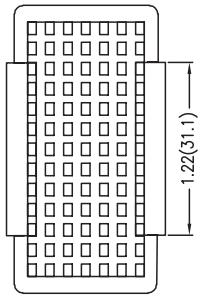
- **Designed specifically for Railway Applications**
- Input voltages of 24 (9-36)VDC, 48(18-75)VDC or 110 (40-160)VDC
- Efficiency up to 88%
- 2250VDC Isolation
- Overload Protection
- Short Circuit Protection
- Over Voltage Protection
- Remote On/Off
- Voltage Trim
- Optional Heatsink
- RoHS Compliant

Model Number	Voltage			Current			Overvoltage Protection	Efficiency	Capacitive Load
	Input		Output	Input		Output			
	Nom. (VDC)	Range (VDC)	(VDC)	@ No Load (mA)	@ Max Load (mA)	Max (mA)	(VDC)	@ Max Load (%, Typ)	Max (Dual each output)
RQT20R24S5	24	9 - 36	5	25	980	4000	6.2	85	6800µF
RQT20R24S12	24	9 - 36	12	25	960	1670	15	87	1200µF
RQT20R24S15	24	9 - 36	15	25	955	1330	18	87	750µF
RQT20R24S24	24	9 - 36	24	25	957	833	27	87	300µF
RQT20R48S5	48	18 - 75	5	15	490	4000	6.2	85	6800µF
RQT20R48S12	48	18 - 75	12	15	474	1670	15	88	1200µF
RQT20R48S15	48	18 - 75	15	15	472	1330	18	88	750µF
RQT20R48S24	48	18 - 75	24	15	473	833	27	88	300µF
RQT20R110S5	110	40 - 160	5	10	219	4000	6.2	83	6800µF
RQT20R110S12	110	40 - 160	12	10	212	1670	15	86	1200µF
RQT20R110S15	110	40 - 160	15	10	211	1330	18	86	750µF
RQT20R110S24	110	40 - 160	24	10	213	833	27	85	300µF





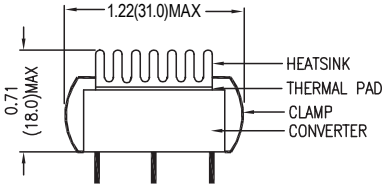
Optional Heatsink
For heatsink order HS01.
Comes with thermal pad and clamps



Pin Connections	
Pin	**Function**
1	+ Vin
2	- Vin
3	Remote On/Off
4	+Vout
5	Trim
6	-Vout

Dimensions are inches (mm) unless noted

Tolerance:	Inches	Millimeters
	X.XX ±0.02	X.X ±0.5
	X.XXX ±0.01	X.XX ±0.25
Pin	±0.002	±0.05



Black Anodized Aluminum
Weight: 9 grams

See Model Selection Table for Model Specific Parameters

Input Parameters	Min	Typ	Max	Units
Input Surge Voltage (100ms max.) 24 Vin 48 Vin 110 Vin	-0.7 -0.7 -0.7		50 100 170	VDC
Startup Threshold Voltage 24 Vin 48 Vin 110 Vin			9 18 40	VDC
Under Voltage Shutdown 24 Vin 48 Vin 110 Vin		7.5 16 37		VDC
Start-up Time		50		mS
Switching Frequency		320		kHz
Input Filter	Internal Pi Network			
Conducted EMI	Meets EN 55022, EN55011, FCC part 15, Class A			
Output Parameters	**Min**	**Typ**	**Max**	**Units**
Output Voltage Accuracy			±1.0	%
Load Regulation Min. Load to Full Load			±0.5	%
Line Regulation Vin=Min. to Max. @ Full Load			±0.2	%
Minimum Load	No Minimum Load Required			
Ripple & Noise (20MHz) See Note 2. 5 Vo Models 12 Vo, 15 Vo 24 Vo			 50 100 150	mV P-P
Transient Recovery Time 25% Load Step Change			300	µs
Transient Response Deviation		±3	±5	%
Temperature Coefficient			±0.02	% / ºC
Over Current Protection	Current limitation at 150% typ of Iout max., Hiccup			
Short Circuit Protection	Hiccup mode 0.7Hz typ.			
General Specifications	**Min**	**Typ**	**Max**	**Units**
Isolation Voltage, 60 seconds (reinforced insulation)	2250			VDC
Insolation Voltage Input/Output to case	1500			VDC
Isolation Resistance 500VDC	1000			Mohms
Isolation Capacitance, 100kHz, 1V		1500		pF
Temperature	Min	Max w/o heatsink	Max with Heatsink	Units
Operating Temperature Natural Convection, Vin nom, Load 100% Inom. Power derating see derating curves.				
XX.48S12, XX.48S15, XX.48S24	-40	+72	+78	ºC
XX.24S12, XX.24S15, XX.24S24	-40	+69	+76	ºC
XX.110S12 XX.110S15	-40	+66	+73	ºC
XX.24S5, XX.48S5, XX.110S24	-40	+62	+70	ºC
XX.110S5	-40	+55	+65	ºC

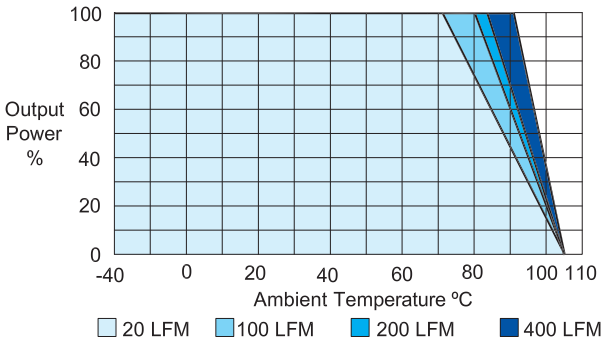
	Min	Typ	Max	Units
Thermal Impedance Natural Convection without heatsink with heatsink	 12.1 9.8			ºC/W
Case Temperature	-40		+105	
Storage Temperature	-50		+125	ºC
Humidity (Operating)			95	%
MTBF MIL-HDBK-217F @25ºC, Ground Benign	TBD			k Hours
Cooling	Free-Air Convection			
Case Size	1.00 x 2.00 x 0.43 inches 50.8 x 25.4 x 11.0 mm			
Case Material	Black Anodized Aluminum Alloy			
Weight (Converter only)	TBD			
Vibration and Thermal Shock	Meets EN61373			
Railway Standard	Meets EN50155			
Railway EMC Standard	Meets EN50121-3-2			
Agency Approvals (Pending)	UL60950-1			

Remote On/Off Control	**Min**	**Typ**	**Max**	**Units**
DC/DC On	3.5V - 12V or Open Circuit			
DC/DC Off	0V - 1.2V or Short Circuit			
Control Input Current (on) Vctrl = 5.0V		0.5		mA
Control Input Current (off) Vctrl = 0 V		-0.5		mA
Control Common	Referenced to Negative Input			
Standby Input Current Nominal Vin		2.5		mA
Output Voltage Trim	**Min**	**Typ**	**Max**	**Units**
Trim Up / Down Range % of nominal output voltage	% of nominal output voltage ±10%			

Notes:
1. Specifications typical at Ta=+25ºC, resistive load, nominal input voltage and rated output current unless otherwise noted.
2. Ripple & Noise measurement with a 10uF/25V MLCC (5Vo, 12Vo and 15 Vo) and a 4.7uF 50V MLCC (24Vo).
3. Transient recovery time is measured to within 1% error band for a step change in output load 75% to 100%.
4. Water washability - ConTech DC/DC converters are designed to withstand most solder/wash processes. Careful attention should be used when assessing the applicability in your specific manufacturing process. Converters are not hermetically sealed.
5. Natural Convection is about 20 LFM but is not equal to still air. (0 LFM)
6. See ConTech website for Definition of Terms, Application Notes, and Test Setups and Parameters. www.ConTech-us.com/appnotes.html.
7. Specifications subject to change without notice.
8. See ConTech website www.ConTech-us.com/pdf/rohs.pdf for RoHS Statement.

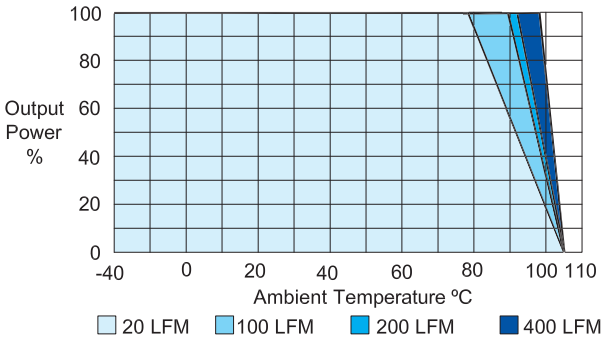
Derating Curves

Without Heatsink

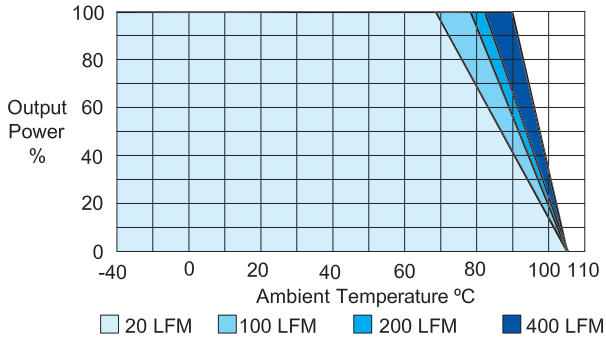


Models: RQT20R48S12, RQT20R48S15, RQT20R48S24

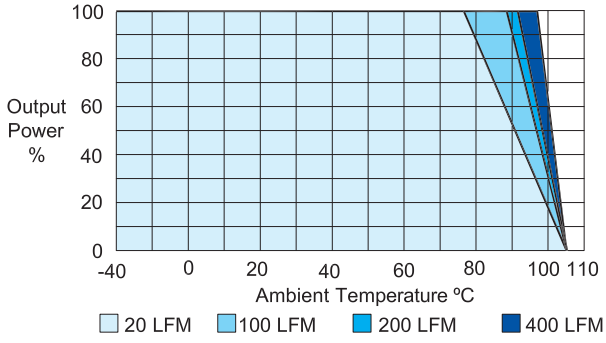
With Heatsink



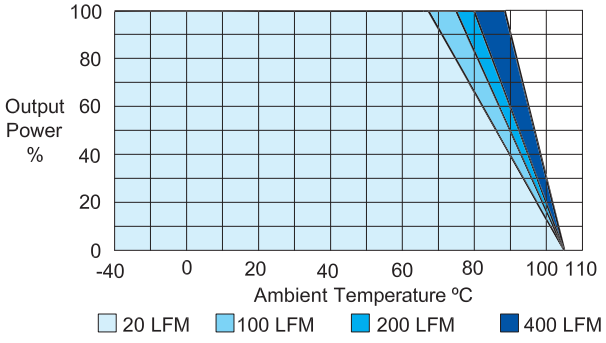
Models: RQT20R48S12, RQT20R48S15, RQT20R48S24



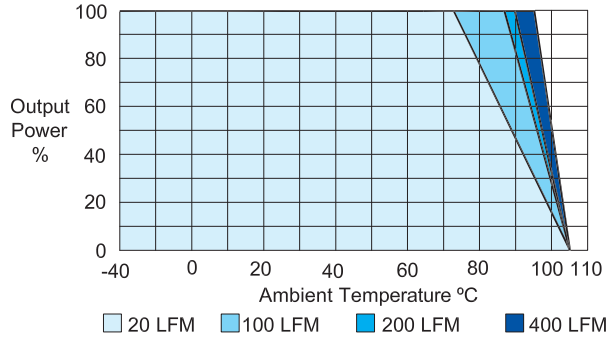
Models: RQT20R24S12, RQT20R24S15, RQT20R24S24



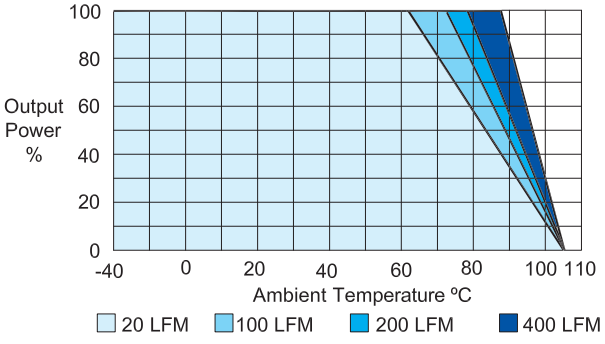
Models: RQT20R24S12, RQT20R24S15, RQT20R24S24



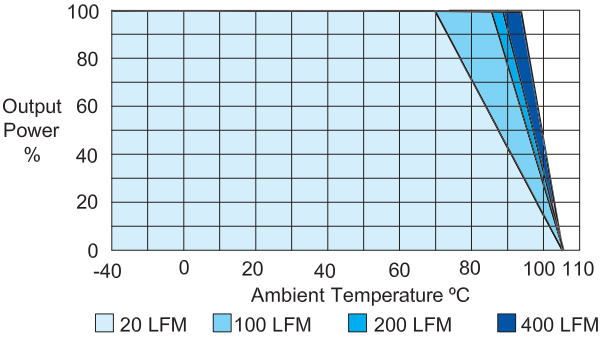
Models: RQT20R110S12, RQT20R110S15



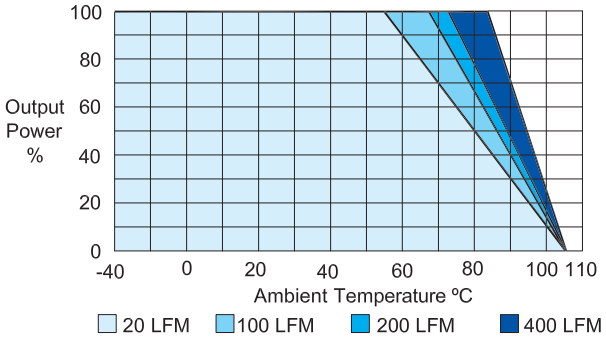
Models: RQT20R110S12, RQT20R110S15



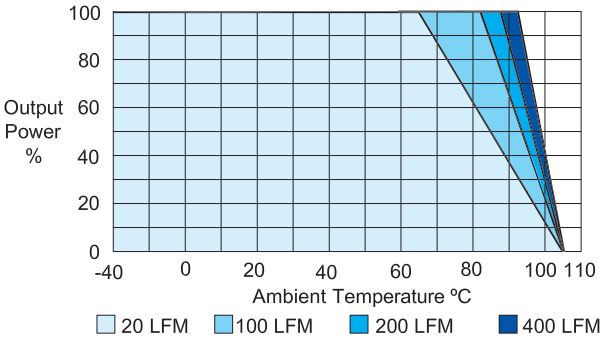
Models: RQT20R24S5, RQT20R48S5, RQT20R110S24



Models: RQT20R24S5, RQT20R48S5, RQT20R110S24



Models: RQT20R110S5



Models: RQT20R110S5

External Output Trimming:

Output can be trimmed using the method below.